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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,660	06/25/2003	Bruno Murari	2110-58-3	4740
7590 07/21/2004			EXAMINER	
GRAYBEAL JACKSON HALEY LLP			NGUYEN, THINH T	
Suite 350			ART UNIT	
155-108th Avenue N.E.			PAPER NUMBER	
Bellevue, WA 98004-5973			2818	

DATE MAILED: 07/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/606,660	Applicant(s) MURARI ET AL.	
	Examiner Thinh T Nguyen	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 20-29 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-29 is/are allowed.
- 6) ☒ Claim(s) 1-8 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED OFFICE ACTION

1. Applicants' election of claim 1-8 and 20-29 without traverse for prosecution of the Application in the communication with the Office on 6/16/2004 is acknowledged.

Specification

2. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant cooperation is requested in correcting any errors of which the applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claim 20 is rejected under 35 U.S.C. 112 second paragraph as being indefinite.

Claim 20 is a hybrid claim of a structure made by a method of fabrication and it is impossible from the recitation of the claim what structure the Applicants want to claim and therefore it is not possible for the examiner to perform a search to determine the patentability of the claim.

Art Unit: 2818**Claim Rejections - 35 USC § 102**

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(b/e) that form the basis for the rejections under this section made in this office action.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Behin et al. (U.S. Patent 6,744,173).

REGARDING CLAIM 1

Behin et al. (fig 1A, fig 2 A- 2 D) disclose a micro machined device, characterized by a semiconductor body (fig 2C layer 206); an intermediate layer on top of the semiconductor body (fig 2C layer 210); a substrate of semiconductor material (fig 1C layer 208), on top of the intermediate layer; a cavity extending in the intermediate layer, the cavity delimiting laterally bottom fixed regions and being delimited at the top by the substrate and at the bottom by the semiconductor body; an oscillating element formed in the substrate above the cavity, trenches extending through the substrate, the trenches insulating the oscillating element from top fixed regions, the oscillating element comprising an oscillating platform and mobile electrodes extending towards the top fixed regions, the bottom fixed regions forming fixed electrodes that extend in the

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intermediate layer towards the inside of the cavity and are staggered with respect to the mobile electrodes.

An even though Behin et al. do not called the moving part as oscillating element, this structure can inherently make to oscillate by applying a periodic time varying voltage through the structure (see fig 1A, column 5 lines 14-44).

REGARDING CLAIM 2

Behin et al.(column 2 lines 9-12) disclose a MEMS device that has bonding structure arranged in the semiconductor layer and the intermediate layer.

REGARDING CLAIM 3

Behin et al. (column 10, lines 5-8) disclose the use of Silicon on Insulator Substrate that means their invention has a structure of an insulating layer between the substrate and the intermediate layer

REGARDING CLAIM 4

Behin et al. (fig 2A column 10 lines 16-17) disclose a MEMS device, wherein said substrate has a top surface, and wherein metal contacts (fig 2a layer 202) are formed above said top surface in direct electrical contact with said top fixed regions and said oscillating element.

REGARDING CLAIM 5

Behin et al. (fig 2A column 1 lines 47-51) disclose a MEMS device wherein said oscillating element forms a mirror element of an optical switch further comprising a pair of supporting arms extending between each anchoring region and the platform.

Art Unit: 2818**REGARDING CLAIM 6,7**

Behin et al. (fig 2A column 1 lines 47-51) disclose a MEMS device wherein the mobile electrodes extend from said platform towards the top fixed regions and wherein the bonding structure is formed by an insulating material layer arranged between the semiconductor body and said intermediate layer

Claim Rejections - 35 USC § 103

7. The following is a quotation of U.S.C. 103(a) which form the basis for all obviousness rejections set forth in this office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Behin et al. (US patent 6,744,173) in view of Rice (U.S. patent 6,624,003).

REGARDING CLAIM 8

Behin et al. disclose all the invention except for a bonding structure that has electrical connection between the top and the bottom. Rice, however, (in fig 8B, in the abstract) teaches How to build a MEMS device that is integrated with a substrate that has conductive features on both faces.

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It would have been obvious to one of ordinary skill in the art the time the invention was made to complement the teachings by Rice with the teachings of Behin et al. in order to come up with the invention of claim 8.

The rationale is as the following:

A person skilled in the art at the times the invention was made would have been motivated to improve the MEMS package size and cost and improve high frequency performance as suggested by Rice (column 2 lines 13-16).

ALLOWABLE SUBJECT MATTER

9. Claims 21-29 are allowed. Claimed 21-29 are allowed because the prior fails to teach the structural limitations:

-- " third and fourth fixed control regions formed separate from the movable element, the third and fourth fixed control regions being coupled to the first and second fixed control regions, respectively, in the intermediate layer. "--

plus all the other limitations as recited in claim 21 and 28.

10. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and the page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

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11. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to be abandoned (see M.P.E.P. 710.02(b)).

12. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) which papers have been placed of record in the file.

CONCLUSION

13. The prior arts made of record and not relied upon are considered pertinent to applicant disclosure: Behin et al. (US patent 6,629,461) disclose biased rotatable combdrive actuator methods; Solgaard et al. (US patent 6,713,367) disclose a self aligned vertical combdrive actuator and method of fabrication.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790. The examiner can normally be reached on Monday-Friday 9:00am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached at 571-272-1787.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Thinh T. Nguyen *TN*

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David Nelms
Supervisory Patent Examiner
Technology Center 2800